Amendments to the Claims:

Following is a complete listing of the claims pending in the application, as amended:

1. (previously presented) A method of forming on the surface of a substrate a coating having a selected surface density of a selected chemical group, said method comprising the steps of:

(a) exposing the surface of the substrate to a plasma within a plasma chamber maintained substantially at atmospheric pressure, to form one or more active species on said substrate surface, and until a desired surface density of the active species is formed;

(b) in the absence of exposure to plasma, exposing the surface to a selected gas or liquid under conditions effective to convert the active species to a stable functional group; and

(c) optionally contacting the exposed surface to a surface-modifying group under conditions effective to covalently attach the surface-modifying group to said functional group,

where the selected chemical group on the surface is the stable functional group or the surface-modifying group covalently attached thereto.

2. (previously presented) The method of claim 1, wherein said exposing to plasma is performed by streaming the plasma through or against the surface of the substrate or maintaining the substrate within a semi-confined space enriched with the plasma.

3. (original) The method of claim 2, wherein said substrate has a tubular shape and the plasma flows against the inside surface of the substrate.

4. (original) The method of claim 2, wherein said substrate has a tubular shape and the plasma flows between the outside surface of the substrate and the inside surface of a surrounding substrate to confine and extend the plasma.

5. (original) The method of claim 1, wherein said surface is a non-porous or porous polymer.

6. (previously presented) The method of claim 5, wherein said surface is porous expanded polytetrafluoroethylene.

7. (currently amended) The method of claim 2, wherein said plasma is formed of ~~an~~ carrier gas and less than ten percent by volume of a gas or vapor selected from the group consisting of oxygen, water, ammonia, ammonium hydroxide, an organic amine, an alcohol, an aldehyde, a carboxylic acid and an ester.

8. (previously presented) The method of claim 1, following step (b) or optional step (c), which further includes contacting said surface with a bioactive or biocompatible agent to bind the bioactive or biocompatible agent to the surface via a covalent or non-covalent bond.

9. (original) The method of claim 8, wherein said bioactive or biocompatible agent is selected from the group consisting of a protein, a peptide, an amino acid, a carbohydrate, and a nucleic acid, each being capable of binding noncovalently to specific and complementary portions of molecules or cells.

10. (original) The method of claim 8, wherein said bioactive or biocompatible agent is selected from the group consisting of an antithrombotic agent, a cell attachment factor, a receptor, a ligand, a growth factor, an antibiotic, and an enzyme.

11. (withdrawn) The method of claim 10, wherein said antithrombotic agent is selected from the group consisting of heparin, hirudin, lysine, prostaglandin, streptokinase, urokinase, and plasminogen activator.

12. (original) The method of claim 10, wherein said cell attachment factor is selected from the group consisting of a surface adhesion molecule and a cell-cell adhesion molecule.

13. (original) The method of claim 12, wherein said surface adhesion molecule is selected from the group consisting of laminin, fibronectin, collagen, vitronectin, tenascin, fibrinogen, thrombospondin, osteopontin, von Willibrand Factor, and bone sialoprotein, and active domains thereof.

14. (previously presented) The method of claim 13, wherein said cell-cell adhesion molecule is the amino acid sequence represented by SEQ ID NO:1.

15. (original) The method of claim 12, wherein said cell-cell adhesion molecule is selected from the group consisting of N-cadherin and P-cadherin and active domains thereof.

16. (withdrawn) The method of claim 10, wherein said growth factor is selected from the group consisting of a fibroblastic growth factor, an epidermal growth factor, a platelet-derived growth factor, a transforming growth factor, a vascular endothelial growth factor, a bone morphogenic protein, and a neural growth factor.

17. (withdrawn) The method of claim 10, wherein said ligand or receptor is selected from the group consisting of an antibody, an antigen, avidin, streptavidin, biotin, heparin, type IV collagen, protein A, and protein G.

18. (withdrawn) The method of claim 10, wherein said antibiotic is selected from the group consisting of an antibiotic peptide.

19. (withdrawn) The method of claim 8, wherein said bioactive or biocompatible agent comprises an enzyme.

20. (original) The method of claim 8, wherein said bioactive or biocompatible agent comprises a nucleic acid sequence capable of selectively binding complementary sequences.

21. (original) The method of claim 8, wherein the bioactive or biocompatible agent is bound to the surface at a density of 0.01 to 1000 nmol/cm^2.

22. (original) The method of claim 21, wherein the bioactive or biocompatible agent is bound to the surface at a density of 0.5 to 30 nmol/cm^2.

23. (original) The method of claim 22, wherein the bioactive or biocompatible agent is bound to the surface at a density of 2 to 20 nmol/cm^2.

24. (original) The method of claim 23, wherein the bioactive or biocompatible agent is bound to the surface at a density of 8 to 15 nmol/cm^2.

25. (previously presented) The method of claim 1, wherein said exposing to a selected gas or liquid is performed by contacting the surface with a substance selected from the group consisting of air, ammonia, oxygen, all in gaseous form, and water, ammonium hydroxide, and hydrazine, all in liquid form.

26. (previously presented) The method of claim 1, wherein the surface exposed to the selected gas or liquid is contacted with the surface-modifying group under

conditions effective to covalently attach the surface-modifying group to said functional group, and

wherein said surface-modifying group is a multifunctional linker selected from the group consisting of anhydrides, alcohols, acids, amines, epoxies, isocyanates, silanes, halogenated groups, and polymerizable groups.

27. (withdrawn) The method of claim 26, wherein said multifunctional linker is a halogenated carboxylic acid.

28. (withdrawn) The method of claim 27, wherein said halogenated carboxylic acid is selected from the group consisting of chloroacetic acid, chlorobutyric acid, and chlorovaleric acid.

29. (original) The method of claim 26, wherein said multifunctional linker is comprised of at least one molecule with 2-20 carbon atoms in the backbone.

30. (original) The method of claim 26, wherein said multifunctional linker is a string formed of heterofunctional molecules.

31. (original) The method of claim 29, wherein said multifunctional linker is a string formed of alternate homofunctional molecules.

32. (canceled)